C-A  OPERATIONS  PROCEDURES  MANUAL


ATTACHMENT


4.120.42.b  Switch Yard Gate Tests


| C-A-OPM Procedures in which this Attachment is used. | | |
|---|---|---|
| 4.120.42 | | |
| | | |
| | | |


<u>Hand Processed Changes</u>


| <u>HPC No.</u> | <u>Date</u> | <u>Page Nos.</u> | <u>Initials</u> |
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Approved: _____*<u>Signature on File</u>*_____  _____
Collider-Accelerator Department Chairman          Date


V. Castillo

**4.120.42.b  Switch Yard Gate Tests**

## PASS ANNUAL ACCEPTANCE TEST PROTOCOL

**Division A Software Filename and Checksum:  Title:**_____        **Checksum:** _____

**Division B Software Filename and Checksum:  Title:**_____        **Checksum:** _____

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**Initial testing complete:**

**Test Team Leader's Name (Print):** _____        **Life Number:** _____

**Test Team Leader's Name (Sign):** _____        **Date:  \_\_\_\_/\_\_\_\_/\_\_\_\_**

**Acceptance test procedure complete (following repairs and retesting if required):**

**Test Team Leader's Name (Print):** _____        **Life Number:**_____

**Test Team Leader's Name (Sign):** _____        **Date:  \_\_\_\_/\_\_\_\_/\_\_\_\_**

**Test results reviewed by:**

**Safety Section Head's Name (Print):**_____        **Life Number:** _____

**Safety Section Head's Name (Sign):**_____        **Date:  \_\_\_\_/\_\_\_\_/\_\_\_\_**

**Test results accepted by Radiation Safety Committee:**

**RSC Member's Name (Print):**_____        **Life Number:** _____

 **RSC Member's Name (Sign):**_____        **Date:  \_\_\_\_/\_\_\_\_/\_\_\_\_**

**1.1**　　　　**CONDUCT**　　Visual check on **Switch Yard** gates following Table-1, below

| Gate | Micro Switch | | Verify Elec Wiring OK | Verify Gate Box OK | Verify Open/Close Fctns OK | Verify all x's Corr. | Inspn OK Init. |
|---|---|---|---|---|---|---|---|
| | Verify Align OK | Verify Opern OK | | | | | |
| **Switch Yard East (Swyd-E)** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Switch Yard U/S Escape (Swyd-Use)** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **Switch Yard D/S Escape (Swyd-Dse)** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | |
| **A Target (ATgt)** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | |

**Legend:  Tick = O.K.　 x = Problem　 N/A = Not Applicable**

**Table 1: Summary of Physical Inspection of AGS Gates**

☐　　**Check for acceptance of Visual check on AGS gates**

**1.2　Test  of Switch Yard East gate**

☐　**VERIFY**　　　Hardware ☐,  Electrical ☐ at **Swyd-E** gate is　　　　　　**OK**

　　**PLACE**　　　Swyd in Res. Acs. (**RA**) from **MCR** with **693** key and Light/Button (**L/B**) on **U-Panel**

☐　**VERIFY**　　　**MCR** sees at **U-Panel SWYD**  in　　　　　　　　　　**RA**

☐　**VERIFY**　　　At encls 2216 (**inside**) and 2215 (**outside**) **RA** light is　　**ON**
☐　**VERIFY**　　　At encls 2216 and 2215 **Beam Disabled** light is　　　　　**ON**
☐　**VERIFY**　　　At encls 2216 and 2215 **Beam Operational** light is　　　　**OFF**

☐　**VERIFY**　　　Attempt to **open Swyd-E** gate with **black P/B** is　　　**SUCCESSFUL**

　　**HOLD**　　　Crash glass microswitch (**CGS**), gate m-switch (**GS**) and Latch switch (**LS**) .　　　　　　　　　　　　　　　　　　　　　**CLOSED**
☐　**VERIFY**　　　At enclosures 2216 and 2215  Crash glass light (**CGL**) ☐, Gate light (**GL**) ☐ and Latch light (**LL**) ☐ are　　　　　**ON**
　　**OPEN**　　　**CGS**
☐　**VERIFY**　　　**CGL** ☐, **GL** ☐ and **LL** ☐ are　　　　　　　　　　　**OFF**
　　**CLOSE**　　　**CGS** and keep **closed**
☐　**VERIFY**　　　**CGL** ☐, **GL** ☐ and **LL** ☐ are　　　　　　　　　　　**ON**

　　**OPEN**　　　**GS**
☐　**VERIFY**　　　At encls 2216 and 2215 **GL** ☐ and **LL** ☐　　　　　　**OFF**
　　**CLOSE**　　　**GS** and keep **closed**　　　　　　　　　　　　　　　**CLOSED**
☐　**VERIFY**　　　**CGL** ☐, **GL** ☐ and **LL** ☐ are　　　　　　　　　　　**ON**

　　**OPEN**　　　**LS**

| | | | |
|---|---|---|---|
| ☐ | **VERIFY** | At encls 2216 and 2215 **LL** | **OFF** |
| | **CLOSE** | **LS** | |
| ☐ | **VERIFY** | **CGL ☐, GL ☐** and **LL ☐** are | **ON** |
| | **RELEASE** | **GS** and **LS** | |
| | | | |
| | **HOLD** | Redundant gate microswitch (**RDS**) | **CLOSED** |
| ☐ | **VERIFY** | At encls 2216 and 2215 Redundant gate light (**RGL**) is | **ON** |
| ☐ | **VERIFY** | MCR sees at U-Panel **Swyd-E** gate **RDS** | **CLOSED** |
| | **OPEN** | **RDS** | |
| ☐ | **VERIFY** | At encls 2216 and 2215 **RGL** is | **OFF** |
| ☐ | **VERIFY** | MCR sees at U-Panel **Swyd-E** gate **RDS** | **OPEN** |
| | | | |
| | **CLOSE** | **Swyd-E** gate | |
| | | | |
| | **PLACE** | SWYD in Con. Acs. (**CA**) from **MCR** with **693** key and **L/B** on **U-Panel** | |
| ☐ | **VERIFY** | **MCR** sees at **U-Panel SWYD** in | **CA** |
| | | | |
| ☐ | **VERIFY** | At encls 2216 and 2215 **RA** light is | **OFF** |
| ☐ | **VERIFY** | At encl 2216 **Beam Disabled** light is | **ON** |
| ☐ | **VERIFY** | At encls 2216 and 2215 **Not Reset** light is | **ON** |
| | | | |
| | **RESET** | **Swyd-E** gate at encl 2215 with **BNL 11 key** | |
| ☐ | **VERIFY** | At encls 2216 and 2215 **Reset** light is | **ON** |
| ☐ | **VERIFY** | MCR sees at U-Panel **Swyd-E** gate | **RESET** |
| | | | |
| ☐ | **VERIFY** | Attempt to **open Swyd-E** gate at encl **2215** with **BNL 11** key and **Sim. release** on W-Panel from **MCR** | **SUCCESSFUL** |
| ☐ | **VERIFY** | At encls 2216 and 2215 **Not Reset** light is | **ON** |
| ☐ | **VERIFY** | MCR sees at U-Panel **Swyd-E** gate | **NOT RESET** |
| | | | |
| | **CLOSE** | **Swyd-E** gate | |
| ☐ | **VERIFY** | MCR sees at U-Panel **Swyd-E** gate **RDS** | **CLOSED** |

☐ **Check for acceptance of Test of Switch Yard East gate**

### 1.3   Test of Switch Yard Upstream Escape (Swyd-Use) gate

| | | | |
|---|---|---|---|
| ☐ | **VERIFY** | Hardware ☐, Electrical ☐ at **Swyd-Use** gate is | **OK** |
| | | | |
| | **PLACE** | Swyd in Res. Acs. (**RA**) from **MCR** with **693** key and Light/Button (**L/B**) on **U-Panel** | |
| ☐ | **VERIFY** | **MCR** sees at **U-Panel SWYD** in | **RA** |
| | | | |
| ☐ | **VERIFY** | At encls 2416 (**inside**) and 2415 (**outside**) **RA** light is | **ON** |
| ☐ | **VERIFY** | At encls 2416 and 2415 **Beam Disabled** light is | **ON** |
| ☐ | **VERIFY** | At encls 2416 and 2415 **Beam Operational** light is | **OFF** |
| | | | |
| ☐ | **VERIFY** | Attempt to **open Swyd-Use** gate with **black P/B** is | **SUCCESSFUL** |
| | | | |
| | **HOLD** | Crash glass microswitch (**CGS**), gate m-switch (**GS**) and Latch switch (**LS**) . | **CLOSED** |
| ☐ | **VERIFY** | At enclosures 2416 and 2415  Crash glass light (**CGL**) ☐, Gate light (**GL**) ☐ and Latch light (**LL**) ☐ are | **ON** |
| | **OPEN** | **CGS** | |
| ☐ | **VERIFY** | **CGL ☐, GL ☐** and **LL ☐** are | **OFF** |

| | | | |
|---|---|---|---|
| | **CLOSE** | **CGS** and keep **closed** | |
| ☐ | **VERIFY** | **CGL** ☐**, GL** ☐ and **LL** ☐ are | **ON** |
| | | | |
| | **OPEN** | **GS** | |
| ☐ | **VERIFY** | At encls 2416 and 2415 **GL** ☐ and **LL** ☐ | **OFF** |
| | **CLOSE** | **GS** and keep **closed** | **CLOSED** |
| ☐ | **VERIFY** | **CGL** ☐**, GL** ☐ and **LL** ☐ are | **ON** |
| | | | |
| | **OPEN** | **LS** | |
| ☐ | **VERIFY** | At encls 2416 and 2415 **LL** | **OFF** |
| | **CLOSE** | **LS** | |
| ☐ | **VERIFY** | **CGL** ☐**, GL** ☐ and **LL** ☐ are | **ON** |
| | **RELEASE** | **GS** and **LS** | |
| | | | |
| | **HOLD** | Redundant gate microswitch (**RDS**) | **CLOSED** |
| ☐ | **VERIFY** | At encls 2416 and 2415 Redundant gate light (**RGL**) is | **ON** |
| ☐ | **VERIFY** | MCR sees at U-Panel **Swyd-Use** gate **RDS** | **CLOSED** |
| | **OPEN** | **RDS** | |
| ☐ | **VERIFY** | At encls 2416 and 2415 **RGL** is | **OFF** |
| ☐ | **VERIFY** | MCR sees at U-Panel **Swyd-Use** gate **RDS** | **OPEN** |
| | | | |
| | **CLOSE** | **Swyd-Use** gate | |
| | | | |
| | **PLACE** | SWYD in Con. Acs. (**CA**) from **MCR** with **693** key and **L/B** on **U-Panel** | |
| ☐ | **VERIFY** | **MCR** sees at **U-Panel SWYD** in | **CA** |
| | | | |
| ☐ | **VERIFY** | At encls 2416 and 2415 **RA** light is | **OFF** |
| ☐ | **VERIFY** | At encl 2416 **Beam Disabled** light is | **ON** |
| ☐ | **VERIFY** | At encls 2416 and 2415 **Not Reset** light is | **ON** |
| | | | |
| | **RESET** | **Swyd-Use** gate at encl 2415 with **BNL 11 key** | |
| ☐ | **VERIFY** | At encls 2416 and 2415 **Reset** light is | **ON** |
| ☐ | **VERIFY** | MCR sees at U-Panel **Swyd-Use** gate | **RESET** |
| | | | |
| ☐ | **VERIFY** | Attempt to **open Swyd-Use** gate at encl **2415** with **BNL 11** key and **Sim. release** on W-Panel from **MCR** | **SUCCESSFUL** |
| ☐ | **VERIFY** | At encls 2416 and 2415 **Not Reset** light is | **ON** |
| ☐ | **VERIFY** | MCR sees at U-Panel **Swyd-Use** gate | **NOT RESET** |
| | | | |
| | **CLOSE** | **Swyd-Use** gate | |
| ☐ | **VERIFY** | MCR sees at U-Panel **Swyd-Use** gate **RDS** | **CLOSED** |

☐ **Check for acceptance of Test of Switch Yard Upstream Escape gate**

**1.4 Test of Switch Yard Downstream Escape (Swyd-Dse) gate**

| | | | |
|---|---|---|---|
| ☐ | **VERIFY** | Hardware ☐**,** Electrical ☐ at **Swyd-Dse** gate is | **OK** |
| | | | |
| | **PLACE** | Swyd in Res. Acs. (**RA**) from **MCR** with **693** key and Light/Button (**L/B**) on **U-Panel** | |
| ☐ | **VERIFY** | **MCR** sees at **U-Panel SWYD** in | **RA** |
| | | | |
| ☐ | **VERIFY** | At encls 2955 (**inside**) and 2954 (**outside**) **RA** light is | **ON** |
| ☐ | **VERIFY** | At encls 2955 and 2954 **Beam Disabled** light is | **ON** |

| | | | |
|---|---|---|---|
| ☐ | **VERIFY** | At encls 2955 and 2954 **Beam Operational** light is | **OFF** |
| ☐ | **VERIFY** | Attempt to **open Swyd-Dse** gate with **black P/B** is | **SUCCESSFUL** |
| | **HOLD** | Crash glass microswitch **(CGS)**, gate m-switch **(GS)** and Latch switch **(LS)** . | **CLOSED** |
| ☐ | **VERIFY** | At enclosures 2955 and 2954  Crash glass light **(CGL)** ☐, Gate light **(GL)** ☐ and Latch light **(LL)** ☐ are | **ON** |
| | **OPEN** | CGS | |
| ☐ | **VERIFY** | **CGL** ☐, **GL** ☐ and **LL** ☐ are | **OFF** |
| | **CLOSE** | **CGS** and keep **closed** | |
| ☐ | **VERIFY** | **CGL** ☐, **GL** ☐ and **LL** ☐ are | **ON** |
| | **OPEN** | **GS** | |
| ☐ | **VERIFY** | At encls 2955 and 2954 **GL** ☐ and **LL** ☐ | **OFF** |
| | **CLOSE** | **GS** and keep **closed** | **CLOSED** |
| ☐ | **VERIFY** | **CGL** ☐, **GL** ☐ and **LL** ☐ are | **ON** |
| | **OPEN** | **LS** | |
| ☐ | **VERIFY** | At encls 2955 and 2954 **LL** | **OFF** |
| | **CLOSE** | **LS** | |
| ☐ | **VERIFY** | **CGL** ☐, **GL** ☐ and **LL** ☐ are | **ON** |
| | **RELEASE** | **GS** and **LS** | |
| | **HOLD** | Redundant gate microswitch **(RDS)** | **CLOSED** |
| ☐ | **VERIFY** | At encls 2955 and 2954 Redundant gate light **(RGL)** is | **ON** |
| ☐ | **VERIFY** | MCR sees at U-Panel **Swyd-Dse** gate **RDS** | **CLOSED** |
| | **OPEN** | **RDS** | |
| ☐ | **VERIFY** | At encls 2955 and 2954 **RGL** is | **OFF** |
| ☐ | **VERIFY** | MCR sees at U-Panel **Swyd-Dse** gate **RDS** | **OPEN** |
| | **CLOSE** | **Swyd-Dse** gate | |
| | **PLACE** | SWYD in Con. Acs. **(CA)** from **MCR** with **693** key and **L/B** on **U-Panel** | |
| ☐ | **VERIFY** | **MCR** sees at **U-Panel SWYD**  in | **CA** |
| ☐ | **VERIFY** | At encls 2955 and 2954 **RA** light is | **OFF** |
| ☐ | **VERIFY** | At encl 2955 **Beam Disabled** light is | **ON** |
| ☐ | **VERIFY** | At encls 2955 and  2954 **Not Reset** light is | **ON** |
| | **RESET** | **Swyd-Dse** gate at encl 2954 with **BNL 11 key** | |
| ☐ | **VERIFY** | At encls 2955 and 2954 **Reset** light is | **ON** |
| ☐ | **VERIFY** | MCR sees at U-Panel **Swyd-Dse** gate | **RESET** |
| ☐ | **VERIFY** | Attempt to **open Swyd-Dse** gate at encl **2954** with **BNL 11** key and **Sim. release** on W-Panel from **MCR** | **SUCCESSFUL** |
| ☐ | **VERIFY** | At encls 2955 and  2954 **Not Reset** light is | **ON** |
| ☐ | **VERIFY** | MCR sees at U-Panel **Swyd-Dse** gate | **NOT RESET** |
| | **CLOSE** | **Swyd-Dse** gate | |
| ☐ | **VERIFY** | MCR sees at U-Panel **Swyd-Dse** gate **RDS** | **CLOSED** |

☐    **Check for acceptance of Test of Switch Yard Downstream Escape gate**

## 1.5 Test of A Target (ATgt) gate

| | | | |
|---|---|---|---|
| ☐ | **VERIFY** | Hardware ☐, Electrical ☐ at **ATgt** gate is | **OK** |
| | **PLACE** | Swyd in Res. Acs. **(RA)** from **MCR** with **693** key and Light/Button **(L/B)** on **U-Panel** | |
| ☐ | **VERIFY** | **MCR** sees at **U-Panel SWYD** in | **RA** |
| ☐ | **VERIFY** | At encls 3633 **(inside)** and 3632 **(outside) RA** light is | **ON** |
| ☐ | **VERIFY** | At encls 3633 and 3632 **Beam Disabled** light is | **ON** |
| ☐ | **VERIFY** | At encls 3633 and 3632 **Beam Operational** light is | **OFF** |
| ☐ | **VERIFY** | Attempt to **open ATgt** gate with **black P/B** is | **SUCCESSFUL** |
| | **HOLD** | Crash glass microswitch **(CGS)**, gate m-switch **(GS)** and Bolt switch **(BS)** . | **CLOSED** |
| ☐ | **VERIFY** | At enclosures 3633 and 3632 Crash glass light **(CGL)** ☐, Gate light **(GL)** ☐ and Bolt light **(BL)** ☐ are | **ON** |
| | **OPEN** | **CGS** | |
| ☐ | **VERIFY** | **CGL** ☐, **GL** ☐ and **BL** ☐ are | **OFF** |
| | **CLOSE** | **CGS** and keep **closed** | |
| ☐ | **VERIFY** | **CGL** ☐, **GL** ☐ and **BL** ☐ are | **ON** |
| | **OPEN** | **GS** | |
| ☐ | **VERIFY** | At encls 3633 and 3632 **GL** ☐ and **BL** ☐ | **OFF** |
| | **CLOSE** | **GS** and keep **closed** | **CLOSED** |
| ☐ | **VERIFY** | **CGL** ☐, **GL** ☐ and **BL** ☐ are | **ON** |
| | **OPEN** | **BS** | |
| ☐ | **VERIFY** | At encls 3633 and 3632 **BL** | **OFF** |
| | **CLOSE** | **BS** | |
| ☐ | **VERIFY** | **CGL** ☐, **GL** ☐ and **BL** ☐ are | **ON** |
| | **RELEASE** | **GS** and **LS** | |
| | **HOLD** | Redundant gate microswitch **(RDS)** | **CLOSED** |
| ☐ | **VERIFY** | At encls 3633 and 3632 Redundant gate light **(RGL)** is | **ON** |
| ☐ | **VERIFY** | MCR sees at U-Panel **ATgt** gate **RDS** | **CLOSED** |
| | **OPEN** | **RDS** | |
| ☐ | **VERIFY** | At encls 3633 and 3632 **RGL** is | **OFF** |
| ☐ | **VERIFY** | MCR sees at U-Panel **ATgt** gate **RDS** | **OPEN** |
| | **CLOSE** | **ATgt** gate | |
| | **PLACE** | SWYD in Con. Acs. **(CA)** from **MCR** with **693** key and **L/B** on **U-Panel** | |
| ☐ | **VERIFY** | **MCR** sees at **U-Panel SWYD** in | **CA** |
| ☐ | **VERIFY** | At encls 3633 and 3632 **RA** light is | **OFF** |
| ☐ | **VERIFY** | At encl 3633 **Beam Disabled** light is | **ON** |
| ☐ | **VERIFY** | At encls 3633 and 3632 **Not Reset** light is | **ON** |
| | **RESET** | **ATgt** gate at encl 3632 with **BNL 11 key** | |
| ☐ | **VERIFY** | At encls 3633 and 3632 **Reset** light is | **ON** |
| ☐ | **VERIFY** | MCR sees at U-Panel **ATgt** gate | **RESET** |
| ☐ | **VERIFY** | Attempt to **open ATgt** gate at encl **3632** with **BNL 11** key and **Sim. release** on W-Panel from **MCR** | **SUCCESSFUL** |

☐ **VERIFY** At encls 3633 and 3632 **Not Reset** light is        **ON**

☐ **VERIFY** MCR sees at U-Panel **ATgt** gate        **NOT RESET**

     **CLOSE**      **ATgt** gate

☐ **VERIFY** MCR sees at U-Panel **ATgt** gate **RDS**        **CLOSED**

     ☐      **Check for acceptance of Test of Switch Yard Downstream Escape gate**

<br>

<center>**END OF TEST PROCEDURE**</center>

<br><br>

**TTL: Sign for completion of initial testing:** _____

<br>

                                 **Date: \_\_\_\_\_/\_\_\_\_/_____**

<br><br>

**TTL: Sign for completion of final testing:** _____

<br>

                                 **Date: \_\_\_\_\_/\_\_\_\_/_____**